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CLAIMS

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[Claim]

[Claim 1] Multilayer \*\*\*\* characterized by being \*\*\*\* which has the multilayer structure more than a bilayer, for the content of a white pigment consisting of 1 % of the weight or more 6 or less % of the weight of synthetic fiber yarn and/or, and \*\*\*\* type bicomponent-fiber yarn with which 3 % of the weight or more 15 or less % of the weight of a core part, and the content of a white pigment have [ the content of a white pigment ] 2 or less % of the weight of \*\*\*\* for the cortex, and at least one layer of layers other than the aforementioned cortex consisting of water absorption and diffusibility fiber yarn.

[Claim 2] Multilayer \*\*\*\* of the claim 1 publication which has the multilayer structure of three layers and by which the interlayer is constituted from raw thread of water absorption and diffusibility fiber yarn, and filament finished yarn of 10% or less of the rates of crimp extension to which a lining changes from water absorption and diffusibility fiber yarn.

[Claim 3] Multilayer \*\*\*\* of the claim 1 publication which consists of filament finished yarn of 10% or less of the rates of crimp extension to which it has the two-layer structure and a lining changes from water absorption and diffusibility fiber yarn.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed description]

[0001]

[The technical field to which invention belongs] this invention relates to multilayer \*\*\*\* which prevents stain, and multilayer \*\*\*\* equipped with the performance which prevents in detail the stain by water suitably used also in the intended use of the miscellaneous goods for days besides garments intended use, such as a blouse, a sport shirt, trousers, and long trousers.

[0002]

[Prior art] When it wets wet to rain or it sweats, it deep-color-izes in detail and only the place where suit, such as a shoulder, the side, and the back, was damp has memorized [ stain and ] displeasure. moreover, the time of the skirt of trousers and long trousers discoloring by the grade in the water of a puddle -- an exterior -- displeasure is given remarkably

[0003] Even when it wets wet, as fiber which is seldom transparent, \*\*\*\* using the \*\*\*\* type bicomponent-fiber yarn which contains many white pigments in a core part is known (publication-number 93343 [ five to ] official report etc.). However, the fault of discoloring if it wets wet in water, although they are effective in being hard to be transparent even if it wets wet in order that these may enlarge the light reflex of a core part with a white pigment and may make small contribution of a decrement of the rate of the white light produced by the refractive-index fall on the front face of fiber by water remains as it is. Therefore, \*\*\*\* equipped with the performance which prevents the stain by water is not known until now.

[0004]

[Object of the Invention] this invention aims at offering multilayer \*\*\*\* equipped with the performance which prevents the stain by water.

[0005]

[The means for solving a technical problem] Before explaining the configuration of this invention, if fiber generally wets wet in water first, it will explain why it discolors. When human being looks at an object, scale division go into the surface reflected light reflected on the front face of the body, and the interior of objective, and catch the light which doubled the internal reflection reflected in an internal interface. The surface reflected light is the white light containing the light of all the same wavelength as an incident light, and internal reflection is the tinction light which received the absorption of light of a certain specific wavelength by the color. Here, it is so whitish that the rate of this white light is large, and it turns out that the rate of the white light looks [ in the parvus ] deeply as for a color. Although water has a parvus refractive index ( $n = 1.33$ ) from fiber, if fiber wets wet in water, in it, a fiber front face will be worn by water, and will form a low refractive index, and a surface reflection factor will become small. therefore -- if it wets wet in water -- stain -- that is, it will deep-color-ize

[0006] As a result of inquiring zealously, for a cortex, the content of a white pigment is [ this invention persons ] 1 % of the weight or more 6 or less % of the weight of synthetic fiber yarn (it is hereafter called dull yarn.). It checked that there was sufficient stain prevention effect for multilayer-structure \*\*\*\* which the content of a white pigment is constituted from \*\*\*\* type bicomponent-fiber yarn which has 2 or less % of the weight of \*\*\*\*, and comes to consist of a lining and/or an interlayer water absorption and diffusibility fiber yarn.

[0007] Multilayer \*\*\*\* by this invention is \*\*\*\* which has the multilayer structure more than a bilayer. the content of 6 or less % of the weight of synthetic fiber yarn and/or a white pigment 1% of the weight or more 3 % of the weight or more 15 or less % of the weight of a core part, [ the cortex ] [ the content of a white pigment ] It is characterized by the content of a white pigment consisting of \*\*\*\* type bicomponent-fiber yarn which has 2 or less % of the weight of \*\*\*\*, and at least one layer of layers other than the aforementioned cortex consisting of water absorption and diffusibility fiber yarn. Multilayer \*\*\*\* by this invention has three layer structures, and an interlayer is desirable when the raw thread of water absorption and diffusibility fiber yarn and the lining consist of filament finished yarn of 10% or less of the rates of crimp extension which consist of water absorption and diffusibility fiber yarn. In multilayer \*\*\*\* which furthermore has the two-layer structure, when it consists of finished yarn of 10% or less of the rates of crimp extension to which a lining changes from water absorption and diffusibility fiber yarn, it is desirable.

[0008] \*\*\*\* of this invention is \*\*\*\* which makes the multilayer structure more than a bilayer. Multilayer structure may mean the structure where two or more sorts of organizations pile up in the state of a layer seemingly, and \*\*\*\* of one sheet is formed, and either textiles or knitting is sufficient as the gestalt here. For example, it can pass about textiles and double textiles and \*\* double textiles, the Mie textiles, etc. can use the multilayer organization more than a bilayer. if it passes with \*\*\*\*\* and \*\*\*\*\* uses the machine edited by double \*\* about knitting including knitting fabric, although it will become the bilayer ground fundamentally -- an organization and yarn usage -- \*\*\*\*\* -- much more -- \*\* -- if it considers, it will become the knitting fabric of three or more layers with a cortex and a lining For example, \*\*\*\*\* of three or more layers can also be made by the

double-sided tackiness or the plating. Moreover, even if it is much more knitting fabric like the plain stitch by the machine edited by single \*\*, by applying a tackiness to a specific stitch like child editing of a deer by the organization, a yoke is partially given and seen in knitting fabric, and it may be made the upper bilayer or you may make it \*\*\*\*\* more than a bilayer by \*\*\*\*\* (plating). It passes, and in knitting fabric, like textiles, a bilayer, three layers, four layers, five layer knitting fabric, etc. were composed by the multilayer, and it passes through them, and they contain knitting fabric. For example, it is \*\*\*\* which has two-sides-of-the-same-coin-ized reversible \*\*\*\*\*. When the organization which uses can seldom see [ a lining and/or ] from a cortex, it is [ that what is necessary is just to employ arbitrary organizations according to the intended use used for textiles and knitting ] desirable.

[0009] As for \*\*\*\* of this invention, it is important that the content of a white pigment consists of 1 % of the weight or more 6 or less % of the weight of synthetic fiber yarn and/or (dull yarn), and \*\*\*\* type bicomponent-fiber yarn with which 3 % of the weight or more 15 or less % of the weight of a core part, and the content of a white pigment have [ the content of a white pigment ] 2 or less % of the weight of \*\*\*\* for the cortex. A cortex means the layer of the direction near the skin inside most here, when a lining wears again the layer which serves as an outside when it wears.

[0010] Although especially the modality is not restricted if there is no problem in a fall of coloring nature and failure is not done to a raw thread manufacture even if it dyes the white pigment used in this invention, metallic oxides, such as titanium oxide, a zinc oxide, a magnesium oxide, and a calcium carbonate, are desirable, for example. Titanium oxide is most suitable if a cost is taken into consideration.

[0011] As for the content of the white pigment of the yarn used for a cortex, it is important to carry out to 6 or less % of the weight 1% of the weight or more, and its 5 or less % of the weight 2 % of the weight or more is desirable. Because, if the content of a white pigment exceeds 6 % of the weight, when the strong ductility of yarn will fall remarkably and will make difficult a raw thread manufacture and \*\*\*\*\* process transit, a guide etc. is worn and faults, such as a fluff and a line, may be started.

Moreover, at less than 1 % of the weight, the stain prevention effect which this invention makes the purpose is not acquired.

[0012] In the case of the \*\*\*\* type bicomponent fiber, it is important that the content of the white pigment of a core part is 15% or less 3 % of the weight or more, and it is desirable. [ of 10 or less % of the weight 5 % of the weight or more ] It is because a strong ductility fall will be remarkably caused if an on-the-strength fall will start gradually if the content of the white pigment of a core part exceeds 10 % of the weight, and it becomes 15% of the weight or more. Moreover, the stain prevention effect of this invention is not acquired at less than 3 % of the weight. And even if a core part and \*\*\*\* have the the same base polymer, there may be. [ no ] For example, in the case of the \*\*\*\* type bicomponent fiber of polyester, only \*\*\*\* may be a cation dyeable polymer. Moreover, in the case of the \*\*\*\* type bicomponent fiber of a polyamide, \*\*\*\* may be nylon 6 in Nylon 66, and a core part can use arbitrary combination. Moreover, the heart component and the sheath component may be compounded in eccentricity, even if it is compounded in concentric circle. Moreover, as for \*\*\*\* weight proportion, it is desirable that it is the domain of 1 / 3 - 3/1, and especially 1 / 2 - 2/1 are desirable. When the stain prevention effect will become small if it is less than 1/3, or 3/1 is exceeded, it may become difficult to cover a heart component of a sheath component at the time of a spinning.

[0013] the fiber for which the fiber used for a cortex is manufactured by melt spinnings, such as a polyamide, polyester, and polypropylene, -- a manufacturing-process top -- desirable -- those raw thread and filament finished yarn -- since the filament finished yarn with a crimp of a covering factor is larger when it is made knitting or textiles same type although whichever may be used and stain of layers other than the aforementioned cortex becomes more unclear, it is desirable Moreover, since the \*\*\*\* type bicomponent fiber excels dull yarn in the stain prevention effect still much more, it is desirable. The \*\*\*\* type bicomponent fiber is excellent also in coloring nature and process permeability as compared with dull yarn besides the stain prevention effect.

[0014] As for multilayer \*\*\*\* of this invention, it is important that at least one layer of layers other than the cortex consists of water absorption and diffusibility fiber yarn. The fiber which has water absorption and a diffusibility here means the fiber which has the property which diffuses the property and/or water which absorb water. In this invention, water absorption includes the \*\*\*\* function on the front face of fiber based on the surface-area effect of fiber gestalt fine-size fiber, such as a crimp of the single fiber of the water absorption based on the property in which the fiber substrate itself absorbs water, and the synthetic fiber currently formed by the hydrophobic polymer, hollow structure, and variant cross-section structure, like regeneration of regenerated-cellulose fiber, sheep wool, hemp, cotton, silk, etc., and a natural fiber. The performance of the large fiber of the translatability of the water on the front face of fiber by the gestalt of the synthetic fiber described above as the property which diffuses water, and the capillarity of fine-size fiber is said. Even if the fiber which has the water absorption and the diffusibility used by this invention is a staple fiber, it may be a continuous glass fiber. As fiber for which a fiber substrate has absorptivity, natural fibers, such as hair, a gossypium, hemp, and silk, artificial cellulose fiber, etc. have this property. In the case of artificial cellulose fiber, not only continuous-glass-fiber raw thread but its finished yarn is used. thus, if layers other than a cortex boil at least the fiber yarn which has the property which absorbs water much more and it is used, the moisture in contact with the cortex will be absorbed by the fiber of the aforementioned layer, and will be useful to preventing stain on a cortex Moreover, the fraction of moisture which contacted the lining conversely which reaches a cortex when absorbed by the fiber of the aforementioned layer decreases, and it is useful to preventing stain on a cortex. Moreover, steam-like sweat can also absorb water and the stain by this can also be prevented.

[0015] Synthetic fiber yarn can be used as aforementioned water absorption and diffusibility fiber yarn. Since the absorptivity of fiber [ itself ] is low in the case of synthetic fiber yarn, the effect by absorptivity cannot be expected but the diffusibility of the water by the capillarity between the single fibers which constitute the hold nature and synthetic fiber yarn of the water by the crimp will be used. It is good to use the raw thread whose single-yarn denier cross-section configurations are the filament raw thread of variant cross sections, such as L, C, W, Z, M, and a gearing form, and its filament finished yarn, the filament raw thread

of porous material fiber (5% - 40% of the rates of a hole), and its filament finished yarn, and is more specifically a fine denier 1.5d or less, and its filament finished yarn. It is good to carry out for making [ many ] a path as water and raising a water diffusibility at the variant cross section or hollow fiber of cross-section configuration W or gearing type, to make a single-yarn denier into a fine denier 1.5d or less further, and to raise the surface area of fiber. It can make what demonstrated the dry nature which will not feel neither the feeling of the cold, nor stickiness at all if it uses for the sport garments from which the property which holds water and it has, without moving to others the water held at once when it was the thing which vas-capillare suction becomes large with the thin vas capillare made when, especially as for W type cross-section yarn, this W type cross-section yarn overlaps, and this cross-section configuration (without it wetting wet and returning) also produces a lot of sweat for a certain reason, and had the stain

[0016] When the degree of anomaly of the fiber in this invention is 2.2 or less [ 1.2 or more ], it is desirable. Moreover, it is still desirable when it is 1.4 or more and 2.2 or less. Since it is inferior to manufacture stabilities, such as spinning nature, when it will become what excelled the round-head cross section in the \*\*\*\* diffusibility markedly if it is 1.2 or more, and 2.2 is exceeded, it is not desirable. The degree of anomaly said by this invention computes the cross section and the circumference (the surrounding length) of variant yarn, searches for the radius of a perfect circle with the same cross section as a degree, computes the circumference of the perfect circle from there, and asks for it by the following formula.

The circumference of the perfect circle of the same cross section as the circumference / variant yarn of degree [ of anomaly ] = variant yarn [0017] If a filament manipulation is given to the raw thread of a synthetic fiber and a crimp is given to it as mentioned above, the synthetic fiber yarn which raised the hold nature of water by physical hold of the water by the crimp can be obtained. However, as for the crimp in this case, it is good to be 5 - 7% in the low crimp of crimp extension, i.e., a rate, preferably 10% or less. It is because the diffusibility of water will fall remarkably and acts on stain prevention of \*\*\*\* conversely at minus, although the space which holds water physically will increase in number if this is a high crimp. Thus, if the configuration and manipulation conditions of synthetic fiber yarn are selected pertinently, the fiber yarn exceeding a natural fiber and artificial cellulose fiber synthetically in water absorption and a diffusibility can be obtained. The size of the yarn used by this invention is used preferably for 10s to 40s (cotton yarn number) by the case of 30d-150d, and spun yarn by the case of a multifilament. It \*\*\*\*s and is not limited to the yarn of this size.

[0018] As much more fiber of layers other than the cortex of multilayer \*\*\*\* of this invention, it is desirable to use the fiber which shows the absorptivity value, each water diffusibility value of 2cm or more, and the value of 10cm or more which are calculated by the measuring method mentioned later at least. When the modified cross section fiber of a synthetic fiber enlarges the degree of anomaly, the fiber which shows the water diffusibility value of 10cm or more is obtained easily. For example, in the case of 1.5 or less fiber, a single-yarn denier can obtain preferably 1.7d of the polyester fiber and nylon fiber a water diffusibility value indicates 15cm or more to be for the W type cross-section fiber the degree of anomaly indicates 1.4 or more to be. The fiber for which the porosity fiber which has the above mentioned rate of a hole, and a hollow fiber have the water diffusibility value of the aforementioned level is obtained easily. And therefore, a modified cross section fiber, porosity fiber, etc. show absorptivity 2.1cm or more in general to the gestalt effect. A water diffusibility value shows [ the degree of anomaly ] 12cm or more also by 1.1 to 1.4 modified cross section fiber at a thing with a single-yarn fineness of 1.7d or less. With the water diffusibility value of 10cm or more and an absorptivity value [ of 2cm or more ] fiber is easily obtained also by the round shape cross-section fiber whose rate of crimp extension is 5 - 7%.

[0019] the moisture which the moisture in contact with the cortex was absorbed by the synthetic fiber yarn of the aforementioned layer when layers other than a cortex boiled at least the yarn which has the property which diffuses the property and/or water which absorb water like the above-mentioned synthetic fiber yarn much more and it was used, and was absorbed further will shift and diffuse the inside of a layer, and is useful to preventing stain on a cortex Moreover, the moisture which the moisture which contacted the lining conversely was absorbed by the synthetic fiber yarn of the aforementioned layer, and was absorbed further will shift and diffuse the inside of a layer, and is useful to preventing stain on a cortex.

[0020] when layers other than a cortex are more than two-layer, it is much more alike, and for the purpose of absorption of moisture, the operation which others are much more alike and mainly absorbs moisture using the above-mentioned synthetic fiber yarn, and the operation which mainly diffuses moisture may be separated using a natural fiber or artificial cellulose fiber yarn, and you may give An individual layer may be made using the synthetic fiber yarn from which two more or more sorts of water absorption and diffusibility ability are different, and the operation which mainly absorbs moisture like the above-mentioned, and the operation which mainly diffuses moisture may be separated and given. It not only performs the combination of the fiber and/or yarn with which above-mentioned water absorption and diffusibility ability are different for every layer, but you may perform it within yarn. For example, the compound yarn of the synthetic fiber yarn comrade who has the property which diffuses the property and/or water which absorb the compound yarn with the synthetic fiber yarn which has the property which diffuses the property and/or water which absorb the compound yarn of the fiber comrade who has different water absorption and hygroscopicity, the fiber yarn which has water absorption and hygroscopicity, and water, or different water can be used. After carrying out the false-twist manipulation of one [ the air interweaving methods, such as various kinds of technique well-known as the compound technique, for example, the interlace method, or the Taslan (registered trademark) method, the technique of carrying out a false-twist manipulation after air interweaving processing, and ] yarn, technique, such as a manufacture of various throwings and the compound yarn by the fine spinning machine and fine-spinning \*\*\*\*, is employable as the technique pan which carries out air interweaving with filament yarn. In addition, in the case of artificial cellulose fiber, not only filament raw thread but the filament finished yarn and the compound yarn containing the filament finished yarn may be used.

[0021] In order to raise the absorptivity of multilayer \*\*\*\* of this invention, you may give an absorbent by the culmination like

the dyeing fitter of multilayer \*\*\*\*. Thus, if a water absorption agent is given, the compatibility with the water of a synthetic fiber will improve, the diffusibility of water improves, and the grade of stain becomes small. For example, it is good to carry out o/w emulsion of the water absorption agent or hydrophilicity-ized agent which makes a principal component hydrophilic copolymerization objects, such as SR series made from Takamatsu Fats and oils and the fine set F101 made from \*\*\*\*\*, three to 5%. Since the stain prevention effect is maintainable for a long period of time if finish processing which raises the endurance of the water absorption agent to wash or long-term wear in that case is performed, it is desirable.

[0022] What is necessary is just to carry out arbitrarily in multilayer \*\*\*\* by this invention according to the intended use of abundant \*\*\*\* which can acquire the combination of various kinds of fiber as mentioned above. Abundant \*\*\*\* by which layers other than a cortex are constituted from a layer to which, as for the desirable combination which can be said as a general inclination, a cortex changes a white pigment from the contained synthetic fiber yarn with water absorption and diffusibility fiber yarn, Multilayer \*\*\*\* by which layers other than a cortex are constituted from a layer which consists of the \*\*\*\* type synthetic fiber yarn in which the cortex contained the white pigment with water absorption / diffusion type fiber yarn, And multilayer \*\*\*\* by which layers other than a cortex are constituted from a layer which consists of the \*\*\*\* type synthetic fiber yarn in which the cortex contained the white pigment with artificial cellulose fiber yarn (it has absorptivity) is raised. In addition, according to the knowledge by the present of the artificer of this invention, although the two following examples can be given as most desirable combination, this invention is not limited to this.

\*\* Bilayer \*\*\*\* by which the lining is constituted from a layer which consists of the \*\*\*\* type synthetic fiber yarn in which the cortex contained the white pigment in the with an or more 1.2 degree [ of anomaly / or less 2.2 ] variant cross section with synthetic-fiber crimp yarn of 5 - 7% of the rates of crimp extension.

\*\* Three layer \*\*\*\* which consisted of a layer to which the layer which consists of the \*\*\*\* type synthetic fiber yarn in which the cortex contained the white pigment, the layer to which an interlayer changes from the raw thread of with an or more 1.2 degree of anomaly / or less 2.2 ] synthetic fiber yarn, and a lining perform a crimp manipulation of a false-twist manipulation etc. to the aforementioned raw thread, make it 5 - 7% of the rates of crimp extension, and change from synthetic-fiber filament finished yarn.

[0023] In multilayer \*\*\*\* of three or more layers, when one layer of either consists of water absorption and diffusibility fiber yarn in more than bilayers other than a cortex, there is no limitation especially about the fiber of the yarn used for other layers, and although various fiber can be used, when the yarn in which the value of 1.5cm or more is shown is used in an absorptivity evaluation examination, it is desirable. Moreover, although it is desirable to constitute the yarn of each class which constitutes multilayer \*\*\*\* from single fiber of the above-mentioned modality, by some intended use, you may mix other fiber within the limit of 30% more preferably within the limit of 50%. Even if especially the mixed use technique is not limited but is yarn composite, composite in the knitting status or textile status, such as intersection editing and a union, is sufficient as it.

[0024] Next, a definition and measurement, or the evaluation technique of the various physical-properties values of the yarn which constitutes multilayer \*\*\*\* by this invention, and the multilayer \*\*\*\* [ itself ] is explained collectively below.

(1) Measure by the rate JIS[ of crimp extension ]-L-1090 (1992) synthetic-fiber textured-yarn test method, and the 5.7 expanding and contracting method B method. The test piece which pretreated by the following technique first is built. It makes five things which hung the sample on a rod which does not do trauma to a sample, and made it the ring, and the load of the number of 2mgfx sample display deniers is applied to each. Next, it \*\*\*\*s, immediately after making this five sample into 1 conclusion, setting the spacing of about 50cm and connecting the upper and lower sides with \*\*\*\* firmly. Then, imposing the load of the number of 0.3mgfx10x sample display deniers, at 90 degrees C, dry heat treatment is performed for 15 minutes, and it is left after \*\*\*\* one whole day and night. The test piece upper part is fixed by the clamp so that examination length may be set to about 20cm in 10 one bundle of test piece which carried out such pretreatment, where the preliminary tension of the number of 2mgfx10x sample display deniers is applied based on the aforementioned JIS-L-1090 and the 5.7 elasticity B method, and the sample length of 30 seconds after (a) is measured correctly. Next, the load of the number of 0.1gfx10x sample display deniers is applied, and the sample length of 30 seconds after (b) is measured correctly. And the rate (%) of crimp extension is computed by the following formula.

Rate [ of crimp extension ] (%) =  $\frac{(b-a)}{a} \times 100$  [0025] (2) Since the absorptivity of two or more yarn constituted although it can do compounds measurement, the absorptivity of absorptivity multilayer \*\*\*\* of yarn cannot measure the absorptivity of yarn itself ]. Then, it refines, dyes and dries on the same conditions as refinement and dyeing / xeraxis process of being used in case of the manufacture of multilayer \*\*\*\* which makes \*\*\*\* the yarn which constitutes multilayer \*\*\*\* and is made into the purpose, and considers as sample yarn. However, when used yarn is filament yarn, the yarn for an examination is prepared so that the single yarn of the single-yarn denier of the filament yarn used in an example and the example of a comparison and the same single-yarn denier may be bundled and a total denier may be set to 75d\*\*5d, 300T \*\* is applied to this yarn, and it sets with steam for 100 degree-Cx 15 minutes, and after xeraxis, it is left by 20 degrees C and 65% RH of humidity one whole day and night, and sample yarn is When used yarn is spun yarn, the yarn which has a size equivalent to 10s of \*\*\*\*s which have \*\* of a number of twist per [ from which the twist constant shown by the following formula is set to 120 ] m, and \*\* is prepared by doubling, and it considers as sample yarn.

It cuts out from a number of twist, N: cotton yarn number, alpha: twist constant, thus the prepared sample yarn 50cm as a measurement sample, per  $T = \alpha \sqrt[3]{NT}$ : m, where a upper limit is fixed, after applying a 0.1g [ /d ] load to the soffit of yarn, a soffit is attached to water (ordinary temperature), and the sucking perpendicular distance of water is measured 10 minutes after. Evaluation is performed with the ten averages. When this sucking distance is 2cm or more, it is estimated that absorptivity is good.

[0026] (3) Measure a water diffusibility using the sample yarn used for measurement of the water diffusibility absorptivity of yarn, and the same yarn. The 1m of the aforementioned sample yarn is cut off, where the end of yarn is fixed, after being able to scratch a near fraction to a block a degree at the end of another side, a 0.1g [d] load is applied to the edge, and yarn is stretched horizontally. 0.01 cc water is given near the center of the yarn under tonus, and the horizontal travel of the water of 10 minutes after is measured. Measurement was performed under 20 degrees C and 65% RH of humidity, and the average of ten measured value estimated the water diffusibility. A travel estimates yarn 10cm or more that a water diffusibility is good.

[0027] (4) The numerical evaluation and organic-functions evaluation by the colorimeter shown in the evaluation following of the stain tightness in \*\*\*\* were combined, and were performed.

(a) The color difference shown for the numeric value by the colorimeter (\*\*E\*)

It measures using the colorimeter \*\*\*\*\* scalar eye 3000 by SAKATA INX CORP.

\*\* The about [ 10cmx10cm ] dry sample sample is used as 2 chip boxes, hit against the colorimetry section with a diameter [ of a colorimeter ] of 2.5cm, measure using light source C, and they are degree exponent a[ of perceived color ] \*, and b\*. And lightness L\* It obtains. Let the acquired value be the standard value of the degree exponent of perceived color, and lightness, respectively.

\*\* Next give 1ml of water to a sample sample, measure the fraction which wetted wet and spread 30 seconds after, and they are degree exponent a[ of perceived color ] \*, and b\* similarly. And lightness L\* It obtains. Let the acquired values be the degree exponent of perceived color, and the trial value of lightness, respectively.

\*\* Degree exponent a[ of perceived color ] \*, and b\* And lightness L\* The difference of a standard value and a trial value is substituted for the following formula, and it is color difference \*\*E\*. It obtains. A measurement size is 2.

The evaluation about [ by viewing ] stain was requested from the examiner of five \*\*E\* = { (\*\*L\*)<sup>2</sup> + (\*\*a\*)<sup>2</sup> + (\*\*b\*)<sup>2</sup> }<sup>1/2</sup> (b) organic-functions evaluations, and the average of the obtained evaluation was classified according to the following organic-functions error criterion. The test piece of 20cmx20cm \*\*\*\* is specifically prepared, 1ml water is dropped at a part for the \*\*\*\* center section with a pipet, and the fraction and access area which were discolored by instillation of water 30 seconds after are compared. O [ \*\* \*\* ] which does not almost have O \*\*\* which does not have the difference of the color between O\*\* dryness and moisture in order from the parvus thing of stain -- \*\* \*\* which is not not much -- x [ \*\* \*\* ] which exists a little -- the dysphoria is sensed with an organoleptic test so that the color difference at the time of the aforementioned dryness and moisture which greatly exist is large The color difference at the time of desirable dryness and moisture is five or less.

[0028] (5) It is the knitting-and-weaving process which has good process permeability in a process permeability example and the example of a comparison, and say what does not give the wear or the blemish to a guide etc. to a knitting-and-weaving machine.

[0029]

[Gestalt of implementation of invention] this invention is explained in full detail below according to an example. However, this invention is not limited by these examples. In order to clarify more a publication of each example and each example of a comparison, the physical-properties value and manipulation conditions common to two or more examples are put in block in advance of a publication of an example, and are indicated below. The evaluation result of a \*\*\*\* example and each example of a comparison was collectively indicated after the example and the example of a comparison as Table 1.

[0030]

(1) Modified cross section fiber It is use (2) refinement about the yarn which consists of fiber of the degree 1.55 of anomaly which has a W type cross section. Bath ratio 1:20 Temperature x time 80 degree-Cx 20 minutes Score roll 2g / L (Kao Corp. make)

(3) Color \*\* ester fiber Dianix Blue UN-SE 1.0%owf (Die Star make)

\*\* Cellulose fiber Sumifix Brilliant Blue R 1.0%owf (Sumitomo Chemical Co., Ltd. make)

[0031]

(4) Dyeing of a dyeing condition \*\* polyester fiber Bath ratio 1:40 Temperature x time 130 degree-Cx 30 minutes pH5 Buffer solution (CH<sub>3</sub> COOH, CH<sub>3</sub> COONa)

Soaping Bath ratio 1:20 Soaping agent \*\*\*\*\* RC700 2g / L (product made from Japanese Flower Chemistry)

NaOH 2g / L Sodium-hydrosulfite sodium 2g / L (product made from Katayama Chemical industry)

Temperature x time Dyeing of 95 degree-Cx 30 minute \*\* cellulose fiber A bath ratio 1:40 Temperature x time 60 degree-Cx 30 minutes An assistant Na<sub>2</sub> SO<sub>4</sub> 50g / L Na<sub>2</sub> CO<sub>3</sub> 15g / L Soaping Bath ratio 1:20 Soaping agent \*\*\*\*\* rise P 1g / L (Sanyo Chemical Industries, Ltd. make)

Temperature x time Dyeing of compound \*\*\*\* of a 80 degree-Cx 10 minute \*\* polyester fiber and cellulose fiber Dyeing of the above-mentioned compound \*\*\*\* dyed cellulose fiber, after dyeing the polyester fiber.

(5) Water absorption manipulation conditions Bath ratio 1:20 Water absorption manipulation agent SR-1000 5%owf (product made from Takamatsu Fats and oils)

Temperature x time 95 degree-Cx30 minute [0032] (6) The false-twist manipulation was carried out on the condition following two kinds of a filament manipulation of conditions at yarn, and crimp yarn was obtained.

\*\* Using false-twist manipulation condition (1):Mitsubishi LS-2, carry out a false-twist manipulation at spindle rotational frequency 250,000rpm, the Z-3200 T number of twist/M first heater temperature of 190 degrees C, the second heater temperature of 180 degrees C, and 12% of the rates of relaxed, and obtain finished yarn of 18 - 22% of the rates of crimp extension.

\*\* If a false-twist manipulation is carried out using false-twist manipulation condition (2):Mitsubishi LS-2 at spindle rotational frequency 250,000rpm, the Z-3200 T number of twist/M first heater temperature of 190 degrees C, the second heater temperature of 180 degrees C, and 6% of the rates of relaxed, finished yarn of 7 - 8% of the rates of crimp extension will be obtained.

[0033]

## [Example]

The polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 which becomes example 1 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight is processed on false-twist manipulation conditions (1). The yarn made into 20% of the rates of crimp extension, the raw thread of the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer, The polyester W type variant cross-section yarn contained 0.1 % of the weight of titanium oxide by 75d/30f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 133g of eyes/, and m2. The double-sided tackiness ground was composed, dyed and finished with the double round-braid machine of 28GGs. The method view of \*\* of a double-sided tackiness is shown in drawing 1 . Originally, the knitting fabric composed with a double round-braid machine is joint field of a knitting fabric fraction composed of a cylinder needle and a dial needle, respectively, and is bilayer knitting fabric in the meaning. However, since knitting fabric is the spacial-configuration field, by \*\*\*\* of 3.6, a cortex is composed, a lining is composed, a cortex and a lining are connected by \*\*\*\* of 2.5 of drawing 1 , and three layer knitting fabric is got by the interlayer who shows by 1.4 with \*\*\*\*. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus very much.

[0034] Become example 2 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The yarn made into 20% of the rates of crimp extension, the raw thread of the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer, The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f is processed into a lining on false-twist manipulation conditions (2). The yarn made into 7% of the rates of crimp extension is used, and it is 133g of eyes/, and m2. The same three layer knitting fabric as an example 1 was composed with the double round-braid machine of 28GGs, and the water absorption manipulation was further carried out after dyeing. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 was very small, and it was the grade in which it does not give having wetted wet.

[0035] Become example 3 cortex from \*\*\*\* which contains the core part which contains titanium oxide 3% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The yarn made into 20% of the rates of crimp extension, the raw thread of the cuprammonium rayon which does not contain titanium oxide by 75d/45f in an interlayer, The yarn which processed the polyester W type variant cross-section yarn which contains titanium oxide 0.05% of the weight by 75d/30f in a lining on false-twist manipulation conditions (2), and made it 7% of the rates of crimp extension is used, and it is 140g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus.

[0036] Become example 4 cortex from \*\*\*\* which contains the core part which contains titanium oxide 10% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer is processed on false-twist manipulation conditions (2) using the yarn made into 18% of the rates of crimp extension. The yarn made into 7% of the rates of crimp extension and the polyester yarn which contains titanium oxide 0.1% of the weight by 75d/36f in a lining are processed on false-twist manipulation conditions (2). The yarn used as 7% of the rates of crimp extension is used, and it is 146g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus very much.

[0037] The polyester yarn which contains titanium oxide 3% of the weight by 75d/36f is processed into example 5 cortex on false-twist manipulation conditions (1). The yarn made into 19% of the rates of crimp extension, the raw thread of the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer, The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 130g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large full dull yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus very much.

[0038] The polyester yarn which contains titanium oxide 1% of the weight by 75d/36f is processed into example 6 cortex on false-twist manipulation conditions (1). The raw thread of the polyester fine denier which contains titanium oxide 0.1% of the weight by 75d/96f in an interlayer using the yarn made into 19% of the rates of crimp extension, The polyester yarn which contains titanium oxide 0.1% of the weight by 75d/36f is processed into a lining on false-twist manipulation conditions (2), the yarn which the rate of crimp extension made 7% is used, and it is 135g of eyes/, and m2. The double round-braid machine of



28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large full dull yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus.

[0039] The polyester yarn which contains titanium oxide 5% of the weight by 75d/36f is processed into example 7 cortex on false-twist manipulation conditions (1). The raw thread of the fine denier of the polyester with which the interlayer contained titanium oxide 0.1% by 75d/96f using the yarn made into 20% of the rates of crimp extension, The polyester fine denier yarn which contains titanium oxide 0.1% by 75d/96f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 138g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large full dull yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus.

[0040] Become example 8 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer is processed on false-twist manipulation conditions (2) using the yarn made into 20% of the rates of crimp extension. The polyester W type variant cross-section yarn which contained the lining 0.1 % of the weight of titanium oxide by 75d/30f is processed on false-twist manipulation conditions (2) using the yarn made into 7% of the rates of crimp extension. The yarn made into 7% of the rates of crimp extension is used, and it is 147g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus very much.

[0041] Become example 9 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The polyester yarn which contains titanium oxide 3% of the weight by the yarn made into 20% of the rates of crimp extension and 75d/36f is processed on false-twist manipulation conditions (1). The raw thread of the polyester fine denier which uses the yarn made into 19% of the rates of crimp extension with a blended ratio 1:1, and contains titanium oxide 0.1% of the weight by 75d/96f in an interlayer, The polyester yarn contained 0.1 % of the weight of titanium oxide by 75d/36f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 133g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn and full dull yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus very much.

[0042] Become example 10 cortex from \*\*\*\* which contains the core part which contains titanium oxide 15% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The yarn made into 20% of the rates of crimp extension is used. to an interlayer The raw thread of 75d/f [ 45 ] cuprammonium rayon, The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 143g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus.

[0043] By the dial side of the double round-braid machine of example 11 28GG The yarn which consisted of \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, processed the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 on false-twist manipulation conditions (1), and was made into 20% of the rates of crimp extension, The polyester yarn which contains titanium oxide 0.3% of the weight by 75d/36f was processed on false-twist manipulation conditions (1), and the T-cloth was composed by the plating so that \*\*\*\* type bicomponent-fiber yarn might come out of the yarn made into 19% of the rates of crimp extension to a side front. Moreover, the T-cloth was composed of the cylinder side from another feeder using 75d/f [ 40 ] cuprammonium rayon yarn. Furthermore, from another feeder, the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f is processed on the above-mentioned manipulation conditions (2), and using the yarn made into 7% of the rates of crimp extension, a cylinder and dial side is composed of a tackiness, and it unifies, and is 200g of eyes/, and m2. Four layer knitting fabric was composed and dyed. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 72% of the cortex. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus.

[0044] Yarn A which became example 12 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, processed the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 on 2 \*\*\*\*\* false-twist manipulation conditions (1), and was made into 20% of the rates of crimp extension, The polyester W type variant cross-section yarn contained 0.1 % of the weight of titanium oxide by 75d/30f is processed into a lining on 2 \*\*\*\*\* false-twist manipulation conditions (2), yarn B made into 7% of the rates of crimp



extension is used, and it is 130g of eyes/, and m2. The single round-braid machine of 28GGs composed and dyed \*\*\*\* of a back deer. The method view of \*\* of the child of a back deer is shown in drawing 2. When the surface gestalt of this knitting fabric was observed by image analysis, the large \*\*\*\* structure yarn of a crimp occupied 85% of the cortex, and W type cross-section yarn became the bilayer knitting fabric which occupied 50% of the lining. The stain when wetting wet as this knitting fabric is shown in Table 1 is the parvus very much.

[0045] Become example of comparison 1 cortex from \*\*\*\* which contains the core part which contains titanium oxide 2% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The raw thread of the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer using the yarn made into 20% of the rates of crimp extension, The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 133g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. This knitting fabric became large to the grade from which the stain when wetting wet produces trouble practically.

[0046] Become example of comparison 2 cortex from \*\*\*\* which contains the core part which contains titanium oxide 16% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The fine denier of the polyester which contains titanium oxide 0.1% of the weight by 75d/96f in an interlayer is processed on false-twist manipulation conditions (2) using the yarn made into 20% of the rates of crimp extension. The polyester which contains titanium oxide for the yarn made into 7% of the rates of crimp extension 0.1% of the weight by 75d/36f in a lining is processed on false-twist manipulation conditions (2). The yarn made into 7% of the rates of crimp extension is used, and it is 133g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 91% of the cortex. Although the stain when wetting wet as this knitting fabric is shown in Table 1 was small, process permeability became the bad remarkable thing and it is unusable.

[0047] The polyester yarn which contains titanium oxide 7% of the weight by 75d/36f is processed into example of comparison 3 cortex on false-twist manipulation conditions (1). The raw thread of the fine denier of the polyester contained 0.1 % of the weight of titanium oxide by 75d/96f in an interlayer using the yarn made into 20% of the rates of crimp extension, The fine denier yarn of the polyester which contains titanium oxide 0.1% of the weight by 75d/96f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 140g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large full dull yarn of a crimp formed 91% of the cortex. Although the stain when wetting wet as this knitting fabric is shown in Table 1 was small, process permeability became the bad remarkable thing and it is unusable.

[0048] Become example of comparison 4 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The yarn made into 20% of the rates of crimp extension and the polyester yarn (75d/36f) which contains titanium oxide 0.1% of the weight are processed on false-twist manipulation conditions (1). The raw thread of the polyester W type variant cross-section yarn which uses the yarn made into 20% of the rates of crimp extension with a blended ratio 1:1, and contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer, The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d/30f is processed into a lining on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 133g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, 75d/f [ 36 ] polyester yarn occupied [ the large \*\*\*\* type bicomponent-fiber yarn of a crimp ] 40% 39% of the cortex. This knitting fabric became what is discolored when it wets wet as shown in Table 1 although process permeability was good.

[0049] Become example 13 cortex from \*\*\*\* which contains the core part which contains titanium oxide 8% of the weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The yarn made into 20% of the rates of crimp extension and the polyester yarn (75d/36f) which contains titanium oxide 3% of the weight are processed on false-twist manipulation conditions (1). The W type variant cross-section yarn of the polyester which uses the yarn made into 20% of the rates of crimp extension with a blended ratio 1:1, and contains titanium oxide 0.1% of the weight by 75d/30f in an interlayer, The polyester yarn which contains titanium oxide for a lining 0.1% of the weight by 75d/36f is processed on false-twist manipulation conditions (2), the yarn made into 7% of the rates of crimp extension is used, and it is 135g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed the same three layer knitting fabric as an example 1. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, full dull yarn occupied [ the large \*\*\*\* type bicomponent-fiber yarn of a crimp ] 40% 39% of the cortex. The stain when wetting wet as shown in Table 1 although this knitting fabric had good process permeability is the parvus very much.

[0050] Become example of comparison 5 cortex from \*\*\*\* which contains the core part which contains titanium oxide 4% of the

weight, and titanium oxide 0.05% of the weight, and the polyester \*\*\*\* type bicomponent-fiber yarn (75d/36f) which is the \*\*\*\* weight proportion 1/1 is processed on false-twist manipulation conditions (1). The yarn which processed the yarn made into 20% of the rates of crimp extension and the polyester yarn contained 0.1 % of the weight of titanium oxide by 75d/24f in a lining on false-twist manipulation conditions (1), and made it 19% of the rates of crimp extension is used, and it is 125g of eyes/, and m2. The double round-braid machine of 28GGs composed and dyed bilayer knitting fabric. When a photograph of the front face of this knitting fabric was taken and the surface gestalt was observed by image analysis, the large \*\*\*\* type bicomponent-fiber yarn of a crimp formed 76% of the cortex. This knitting fabric became what is discolored when it wets wet as shown in Table 1 although process permeability was good.

[0051]

[Table 1]

		多層布帛を構成する糸の性質 (上段: 水吸収性 (cm) 下段: 親水性 (cm))			多層布帛の染色防止性	
		二層目	中層	底層	色差 ΔE*	官能 評価
実 施 例	1		16.7	13.1		
			2.5	2.5	3.1	◎
	2		18.2	14.5		
			3.4	3.4	2.8	◎↑
	3		8.3	18.7		
			2.0	2.5	4.0	○
	4		14.5	10.2		
			2.5	2.1	3.0	◎
	5		16.7	13.1		
			2.5	2.5	3.3	◎
	6		15.4	10.2		
			2.2	2.1	4.4	○
	7		15.4	12.0		
			2.2	2.2	3.0	◎
比 較 例	8		13.1	13.1		
			2.5	2.5	3.3	◎
	9		15.4	10.2		
			2.2	2.1	3.2	◎
	10		8.3	13.1		
			2.0	2.5	3.3	◎
	11		10.2	13.1		
			2.1	2.0	3.5	◎
	12			13.1		
				2.5	3.6	◎
	13		16.7	10.2		
			2.5	2.1	3.2	◎
	1		16.7	13.1		
			2.5	2.5	7.8	×
比 較 例	2		15.4	10.2		
			2.5	2.2	2.0	◎
	3		15.4	12.0		
			2.2	2.2	2.0	◎
	4		16.7	13.1		
			2.5	2.5	5.1	△
比 較 例	5			7.1		
				1.3	5.8	△

[0052] The polyester W type variant cross-section yarn which consists of \*\*\*\* which contains the core part which contains titanium oxide for example 14 warp 8% of the weight by 50d/36f, and titanium oxide 0.05% of the weight, and contains titanium oxide 0.1% of the weight by the polyester \*\*\*\* type bicomponent-fiber yarn which is the \*\*\*\* weight proportion 1/1, and 50d/30f. The wool is used as the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d / polyester \*\*\*\* type bicomponent-fiber yarn of the above-mentioned [ 36f ], and 75d/30f. a conventional method is double -- a weaving machine -- using -- 260 warp densities, 155 wool densities, 150g of eyes/, and m2 The Heiji pile textiles were woven and dyeing and the water absorption manipulation were performed. The stain when these textiles becoming the structure which is visible to a cortex when the surface gestalt is observed by image analysis, and wetting wet is the parvus very much.

[0053] The polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by the polyester yarn which contains titanium oxide for example 15 warp 3% of the weight by 50d/36f, and 50d/30f. The wool is used as the polyester W type variant cross-section yarn which contains titanium oxide 0.1% of the weight by 75d / polyester \*\*\*\* type bicomponent-fiber yarn of the above-mentioned [ 36f ], and 75d/30f. a conventional method is double -- a weaving machine -- using -- 260 warp densities, 155 wool densities, 150g of eyes/, and m2 The Heiji pile textiles were woven and dyeing and the

water absorption manipulation were performed. The stain when these textiles becoming the structure which is visible to a cortex when the surface gestalt is observed by image analysis, and wetting wet is the parvus very much.

[0054] The polyester yarn which consists of \*\*\*\* which contains the core part which contains titanium oxide for example of comparison 6 warp 2% of the weight by 50d/36f, and titanium oxide 0.05% of the weight, and contains titanium oxide 0.1% of the weight by the polyester \*\*\*\* type bicomponent-fiber yarn which is the \*\*\*\* weight proportion 1/1, and 50d/24f, The woof is used as the polyester yarn which contains titanium oxide 0.1% of the weight by 75d / polyester \*\*\*\* type bicomponent fiber of the above-mentioned [ 36f ], and 75d/24f. a conventional method is double -- a weaving machine -- using -- 260 warp densities, 155 woof densities, 150g of eyes/, and m2 The Heiji pile textiles were woven and dyeing and the water absorption manipulation were performed. When these textiles observed the surface gestalt by image analysis, the \*\*\*\* type bicomponent fiber became the structure which is visible to a cortex, and they became what is discolored when it wets wet, although process permeability was good.

[0055]

[Effect of the invention] According to this invention, stain of \*\*\*\* by rain or sweat can be prevented, and \*\*\*\* which, as a result, does not have the displeasure based on the stain by water can be offered. In addition, multilayer \*\*\*\* of this invention did not almost have troubles, such as the thread breakage at the time of a manufacture of raw material yarn, and a manufacture of \*\*\*\*, and its process stability was good.

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[Translation done.]